Power Query

Tips & Tricks

1. Give every step an explanatory name and merge steps of the same type, for better manageability. Some people prefer to not use spaces in the name of a step, for a better M coding experience. `Updated`
2. Give queries and columns user-friendly names, as they will become part of your data model.
3. Make sure that each column has the correct data type. Making the model smaller and faster.
4. Remove columns you are not going to use in your report. Prefer 'Remove Other Columns' above the 'Remove Columns' option, for lower risk that structural changes in your data source break the query.
5. Maximize the use of Query Folding for faster and more efficient queries. With Query Folding, multiple transformations are merged as one query and then sent to the source. If 'View Native Query' is not available, Query Folding has stopped before that step.
6. In general, prefer "Import" over "DirectQuery". Unless the amount of data is too large to import, or when there are other requirements (like real-time insights).
7. Use Date.From instead of DateTime.Date to extract a date from another field, and to make sure query folding won't break. More info on this blog post: http://bit.ly/DateFrom. `new`
8. Turn off 'Enable Load' for queries/tables that you don't need in the Data Model.
9. Re-use Power Query code and lower impact on your data source by using Power BI dataflows.
10. Turn on the Formula Bar so you get familiar with Power Query (M) code.
11. Automatically beautify all column names in a query, e.g. "CustomerName" → "Customer Name", by using the Power Query function Alex Powers shared on his GitHub repo: http://bit.ly/PQSplitByCase. Note: he also has a function to replace underscores in all column names automatically.

Code examples (don't forget that Power Query / M is case-sensitive!)

- **if** T > 0 **then** A **else** B
- **try** A/B **otherwise** 0
- **#table(** { "X", "Y" }, { { 1, 2 }, { 3, 4 } } **)**
- **DateTime.LocalNow()**
- **Date.From(** DateTime.LocalNow() **)**
- **Excel.Workbook(**Web.Contents("[url]/[filename].xlsx"), null, true**)**
- **#shared** to list all functions and get PQ documentation `new`

Resources

- Power Query M Formula Reference: http://bit.ly/PQMReference.
- Repo by Imke Feldmann with a lot of custom Power Query functions: https://github.com/ImkeF/M/. `new`

Data Model

Tips & Tricks

1. Always use a separate Date table in your data model. Mark it as a Date Table.
2. Only use DAX Calculated Columns when it's not possible to create it using Power Query. This improves clarity and manageability of your report as transformations are located where you expect them. It also improves query speed of the model and reduces refresh duration.
3. Give measures a prefix (%, #, €).
4. Use abbreviations like YTD, LY, PY, PP as a suffix, to keep the base fields together in the sort order.
5. Hide columns that are needed but are irrelevant for the user.
6. Hide the key at the many side of a many-to-one relation (e.g. [OrderDate] in the 'Revenue' table).
7. For each measure column in your data model, make a DAX Calculated Measure instead of using the 'Default Summarization', then hide the original column. This way all measures will have the same icon. And it enables you to easily change the calculation in the future (e.g. adding a filter condition). Also, it is easier to reference this measure in other DAX calculations.
8. Always use the table name when you refer to a column, for example: 'Product'[Category].
9. Use DIVIDE() to prevent division by 0, and to improve the speed of your divisions.
10. Use IsInScope to get the right hierarchy level in DAX (read all about it in Kasper de Jonge's blog: https://bit.ly/KasperOnBIInScope).
11. In DAX: (un)comment DAX lines by pressing Alt + Shift + A or CTRL + /, and Shift + Enter for line breaks.
12. Use aggregations to keep your model small and performant, and still have all detailed data available.
13. Use Tabular Editor to make changes to your Power BI file (currently unsupported by Microsoft). Also, make sure to check-out its best-practices analyzer.
14. Avoid bi-directional cross filtering and make use of measure filters http://bit.ly/MeasureFilters.
15. For very large models, group measures or fields in display folders for better usability.
16. Use DAX Studio to capture all DAX queries executed on your Premium Capacity. `new`
17. Keep your PBI desktop file fast and small by using TOP N (http://bit.ly/ImproveReportBuilding) and switch underlying data source in PBI service after publishing (http://bit.ly/ParameterizeDatasource). `new`

Resources

- Increase the readability of your DAX calculations: https://www.daxformatter.com.
- Use DAX Studio to analyze and tune your calculations: http://daxstudio.org.
- Find all about DAX expressions: https://dax.guide.
- Use Tabular Editor to easily build and manage your models: https://tabulareditor.github.io/.

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Data Visualization

Tips & Tricks

Themes & Colors

1. Use a theme file (.json) with branding of your organization (visit https://powerbi.tips/ for a generator).
2. Always pick colors from your theme file instead of recent colors. Otherwise you will break the relationship with your theme file for this object and changes in your theme file will not be applied.
3. Use a Power BI Template file (.pbit), to bring consistency in the look & feel of reports in your organization (e.g. add a default background, add common data sources).
4. Don't use noisy images as a background. They distract from the data.
5. Apply colors with a purpose and not because it looks fancy. Consider the interpretation of colors (for example red is usually associated with a negative situation, green with a positive situation).
6. Think about colorblindness (8% of male, 0.6% of women have red-green color blindness).
7. Use HEX color codes in your dimensional tables or DAX expressions to apply color formatting. Read all about it on this page: https://bit.ly/DataMarcAdvancedControls.

Report layout

8. Try out Figma for wireframing/prototyping of your report pages (https://bit.ly/Frigma). `new`
9. Put slicers on a consistent place on each page for user-friendliness and recognition.
10. Give all relevant visuals a clear and explanatory title, this will show up in the selection pane and will be used as filename when using the export option of a visual (you can hide the title after renaming). `Updated`
11. Use the new grouping functionality to group object together and easily maintain your report. `new`
12. Use the ▲ and ▼ buttons on the Selection Pane, to change the display order of visuals and groups.
13. Use drillthrough and tooltip pages to add extra context. Hide drillthrough and tooltip pages from your navigation bar. Give the 'back button' extra accent for clear report navigation.
14. Disable visual header for a clean look-and-feel and drill up/down using right click.
15. Use Canva's drag-and-drop feature to design one or more-page layouts (https://bit.ly/CanvaLayouts). `new`

Graphs & Visuals

16. Prefer graphs over tables for better insights. When you do use tables, apply conditional formatting.
17. Think about using relative date filters, such as "Last Month" or "Rolling Year".
18. Need a special visual? Check out https://charticulator.com/ and create bespoke chart designs without programming. Free and Open Source from Microsoft Research. `new`
19. When using custom visuals, test the impact on the performance of your report. Also, check when it was last updated by the developer. Strongly consider using only certified custom visuals.
20. Check and improve all 'visual interactions'. Prefer cross-filtering over cross-highlighting.

Resources

- OK VIZ Visual reference: https://sqlbi.com/ref/power-bi-visuals-reference.
- SQL Jason Financial Times Visual Vocabulary: https://bit.ly/SQLJasonVisualVocabulary.
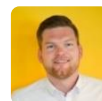
Miscellaneous

Tips & Tricks

1. Edit your report in Power BI Desktop and not in the Service. Making sure there is one golden version.
2. The best way to share your Power BI solution with others is using Apps. Prefer to use Security Groups.
3. Create the same data source in a gateway multiple times, with different credentials based on the required security context for each one. `new`
4. Make sure you have versioning for your Power BI Desktop files (local OneDrive sync works well).
5. Use dataflows to host generic Power Queries and reuse the table output across multiple data models.
6. Optimize usage of the dataflows compute engine. Read details here: http://bit.ly/DataflowsCompute. `new`
7. Want to test-drive Power BI Premium? The Azure Power BI Embedded A SKU will give you the Premium experience, without the long-term commitment and up-front costs.
8. Only use Publish to Web when your data can be out in the open. Browse the Gallery of Public Reports and more information about the risks of this feature on https://bit.ly/ModernDataPublishToWeb.
9. Be aware that users can also access your data model through the Q&A, Quick Insights and Analyze in Excel functions. That's great, but think about data protection using (dynamic) row level security.
10. Use the Power BI admin API to get an overview of Power BI content within your tenant and monitor content usage by using the Power BI Audit logs.
11. Getting started with Power BI? Visit: https://docs.microsoft.com/en-us/power-bi/guided-learning/.
12. Thinking about embedding Power BI visuals in your custom application? See it in action and try out all the options in this live demo environment: https://bit.ly/PBIEmbedded. `new`

Resources

- Follow these Power BI product team members: Amanda Cofsky, Arun Ulag, Chris Webb, GuyInACube (Adam & Patrick), Christian Wade, Josh Kaplan, Justyna Lucznik, Kasper de Jonge, Kay Unkroth, Kelly Kaye, Kim Manis, Lukasz Pawlowski, Matt Mason, Matthew Roche, Miguel Martinez, Nikhil Gaekwad, Nimrod Shalit, Phil Seamark, Will Thompson. `Updated`
- Follow these bloggers and influencers for tips, examples and news : Alberto Ferrari, Brett Powell, David Eldersveld, Devin Knight, Gil Raviv, Imke Feldmann, Ivan Bond, Jason Thomas, Ken Puls, Ken Russel, Leila Etaati, Maegon Longoria, Matt Allington, Marco Russo, Maxim Zelensky, Melissa Coates, Miguel Eskobar, Paul Turley, Prathy Kamasani, Reid Havens, Reza Rad, Rob Collie, Rob Farley, Ruth Pozuelo (Curbal), Nicky van Vroenhoven. `Updated`

Contribute!

Do have suggestions or questions regarding the Power BI Cheat Sheet? We'd love to hear from you!
Contact us on LinkedIn or Twitter, or send an email to powerbi@macaw.nl.
You are welcome to submit your changes via GitHub: https://bit.ly/PBICheatSheetGitHub.

Dave Ruijter
linkedin.com/in/daveruijter
twitter.com/daveruijter
https://moderndata.ai/

Marc Lelijveld
linkedin.com/in/marclelijveld
twitter.com/marclelijveld
https://data-marc.com/

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